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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
NGUYEN, DAO H	
ART UNIT	**PAPER NUMBER**
2818	

DATE MAILED: 12/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

VN

Office Action Summary	Application No.	Applicant(s)
	10/754,701	YAMAZAKI ET AL.
	Examiner	Art Unit
	Dao H. Nguyen	2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 October 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *40-109* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *40-109* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. In response to the communications dated 10/12/2006, claims 40-109 are active in this application.

Claim(s) 1-39 have been cancelled.

Claims 96-109 are newly added claims.

Remarks

2. Applicant's argument(s), filed 10/12/2006, have been fully considered, but are not persuasive. Particularly, Applicant's argument(s) that "neither Forrest, Kimura, nor any proper combination of the two describes or suggests an electroluminescent element having an operation voltage of 10V or less" is/are not agreed.

Fig. 6 illustrates the Current-Voltage and Quantum Efficiency-Voltage of the light emitting device of Forrest (US 6,310,360). According to fig. 6, certain quantum efficiencies (of greater than zero) are obtained at operating voltages of 10V or less. Therefore, Forrest does disclose the light emitting wherein the operation voltage of the electroluminescent element is 10V or less.

For the above reason(s), it is believed that the previous Office Action should be retained, and is rewritten below, in view of the amendment(s).

Claim Rejections - 35 U.S.C. § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim(s) 40-95 is/are rejected under 35 U.S.C. 103 (a) as being unpatentable over U.S. Patent No. 6,310,360 to Forrest et al., in view of Kimura, U.S. Patent No. 6,518,941.

Regarding claim 40, Forrest discloses a light emitting device comprising:

an electroluminescent element using a luminescent material (col. 9, line 18 to col. 11, line 18) in which electroluminescence is obtained by triplet excitation (col. 2, line 58 to col. 3, line 53; col. 5, lines 9-27: the ISC Agents convert all of the excitations/excitons into their triplet excitations/excitons, which do emit),

wherein the operation voltage of the electroluminescent element is 10V or less (see fig. 6).

Forrest is silent about a transistor electrically connected to the electroluminescent element, wherein digital signals are applied to a gate electrode of the transistor.

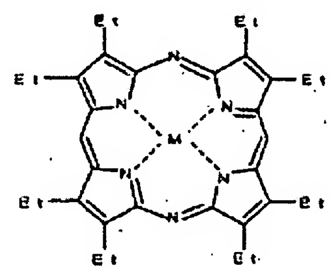
Kimura discloses a light emitting device comprising an electroluminescent element 10810 (figs. 1, 2) using a luminescent material and a thin film transistor 10710 electrically connected to the electroluminescent element 10810; wherein digital signals are applied to a gate electrode of the transistor 10710 to switch the transistor on/off. See further col. 2, lines 19-49; col. 3, line 47 to col. 4, line 61.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Forrest so that it would include a thin film transistor electrically connected to the electroluminescent element as that of Kimura in order to control currents applied to the electroluminescent element, hence, to control the luminous intensity of the electroluminescent element. By using digital signal to control the transistor serially connected to the electroluminescent element, the nonuniformity in the luminous intensity of the luminescent element, caused by the nonuniformity in the conductance of the transistor, would be reduced, thereby the image quality would be improved (col. 2, lines 1-10, and lines 19-49 of Kimura.) Furthermore, such modification would greatly improve the performance of the device of Forrest due to an ease in controlling the device.

Regarding claim 41, Forrest/Kimura disclose the device wherein the transistor is a TFT. See col. 2,lines 19-49; col. 3, line 47 to col. 4, line 61 of Kimura.

Regarding claims 42-46, Forrest/Kimura disclose the device comprising all claimed limitations. See col. 16, line 65 to col. 17, line 8 of Forrest.

Regarding claim 47, Forrest discloses a light emitting device comprising an electroluminescent element which includes a thin film including a luminescent material expressed by a following formula:



wherein Et represents etyl group; and M represents an element belonging to group 8 to 10 of a periodic table (col. 9, line 18 to col. 11, line 18; col. 17, line 11 to col. 19, line 19; and col. 20, lines 42-44),

wherein the operation voltage of the electroluminescent element is 10V or less (see fig. 6).

Forrest is silent about a transistor electrically connected to the electroluminescent element, wherein digital signals are applied to a gate electrode of the transistor.

Kimura discloses a light emitting device comprising an electroluminescent element 10810 (figs. 1, 2) using a luminescent material and a thin film transistor 10710

electrically connected to the electroluminescent element 10810; wherein digital signals are applied to a gate electrode of the transistor 10710 to switch the transistor on/off. See further col. 2, lines 19-49; col. 3, line 47 to col. 4, line 61.

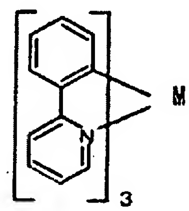
It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Forrest so that it would include a thin film transistor electrically connected to the electroluminescent element as that of Kimura in order to control currents applied to the electroluminescent element, hence, to control the luminous intensity of the electroluminescent element. By using digital signal to control the transistor serially connected to the electroluminescent element, the nonuniformity in the luminous intensity of the luminescent element, caused by the nonuniformity in the conductance of the transistor, would be reduced, thereby the image quality would be improved (col. 2, lines 1-10, and lines 19-49 of Kimura.) Furthermore, such modification would greatly improve the performance of the device of Forrest due to an ease in controlling the device.

Regarding claim 48, Forrest/Kimura disclose the device wherein M is an element selected from the group consisting of nickel, cobalt and palladium. See col. 9, line 18 to col. 11, line 18; col. 17, line 11 to col. 19, line 19; and col. 20, lines 42-44 of Forrest.

Regarding claims 49-54, Forrest/Kimura disclose the device comprising all claimed limitations. See col. 16, line 65 to col. 17, line 8 of Forrest.

Regarding claim 55, Forrest discloses a light emitting device comprising:

an electroluminescent element (col. 9, line 18 to col. 11 , line 18), wherein the electroluminescent element includes a thin film including a luminescent material expressed by a following formula:



wherein M represents an element belonging to group 8 to 10 of the periodic table (col. 9, line 18 to col. 11 , line 18; col. 17, line 11 to col. 19, line 19; and col. 20, lines 42-44), wherein the operation voltage of the electroluminescent element is 10V or less (see fig. 6).

Forrest is silent about a transistor electrically connected to the electroluminescent element, wherein digital signals are applied to a gate electrode of the transistor.

Kimura discloses a light emitting device comprising an electroluminescent element 10810 (figs. 1, 2) using a luminescent material and a thin film transistor 10710 electrically connected to the electroluminescent element 10810; wherein digital signals

are applied to a gate electrode of the transistor 10710 to switch the transistor on/off. See further col. 2, lines 19-49; col. 3, line 47 to col. 4, line 61.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Forrest so that it would include a thin film transistor electrically connected to the electroluminescent element as that of Kimura in order to control currents applied to the electroluminescent element, hence, to control the luminous intensity of the electroluminescent element. By using digital signal to control the transistor serially connected to the electroluminescent element, the nonuniformity in the luminous intensity of the luminescent element, caused by the nonuniformity in the conductance of the transistor, would be reduced, thereby the image quality would be improved (col. 2, lines 1-10, and lines 19-49 of Kimura.) Furthermore, such modification would greatly improve the performance of the device of Forrest due to an ease in controlling the device.

Regarding claim 56, Forrest/Kimura disclose the device wherein M is an element selected from the group consisting of nickel, cobalt and palladium. See col. 9, line 18 to col. 11, line 18; col. 17, line 11 to col. 19, line 19; and col. 20, lines 42-44 of Forrest.

Regarding claims 57-62, Forrest/Kimura disclose the device comprising all claimed limitations. See col. 16, line 65 to col. 17, line 8 of Forrest.

Regarding claim 63-65, Forrest/Kimura discloses the light emitting device comprising all claimed limitations. See col. 2, lines 19-49; col. 3, line 47 to col. 4, line 61 of Kimura. Nevertheless, it is noted that since this invention is about a device itself, not about method(s) for operating a device, therefore, "method of operating a device" limitation(s) would not have patentable weight on device claim(s).

Regarding claim 66, Forrest discloses a light emitting device comprising:

an electroluminescent element comprising a first electrode, a second electrode, and a luminescent material interposed between the first and the second electrodes (fig. 5, and col. 9, line 18 to col. 11, line 18);

wherein, in the luminescent material, electroluminescence is obtained by triplet excitation (col. 2, line 58 to col. 3, line 53; col. 5, lines 9-27: the ISC Agents convert all of the excitations/excitons into their triplet excitations/excitons, which do emit), and

wherein the operation voltage of the electroluminescent element is 10V or less (see fig. 6).

Forrest is silent about a transistor having a source region, a drain region and a gate electrode, wherein any one of the source region and the drain region is electrically connected to the first electrode, and wherein digital signals are applied to the gate electrode.

Kimura discloses a light emitting device comprising an electroluminescent element 10810 having a first electrode (lower electrode), a second electrode (upper electrode 111; figs. 1, 2); a luminescent material interposed between the first electrode and the second electrode; and a thin film transistor 10710 having a source region, a drain region and a gate electrode, wherein any one of the source region and the drain region is electrically connected to the first electrode of the electroluminescent element 10810 (fig. 2); wherein digital signals are applied to a gate electrode of the transistor 10710 to switch the transistor on/off. See further col. 2, lines 19-49; col. 3, line 47 to col. 4, line 61.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Forrest so that it would include a thin film transistor electrically connected to the electroluminescent element as that of Kimura in order to control currents applied to the electroluminescent element, hence, to control the luminous intensity of the electroluminescent element. By using digital signal to control the transistor serially connected to the electroluminescent element, the nonuniformity in the luminous intensity of the luminescent element, caused by the nonuniformity in the conductance of the transistor, would be reduced, thereby the image quality would be improved (col. 2, lines 1-10, and lines 19-49 of Kimura.) Furthermore, such modification would greatly improve the performance of the device of Forrest due to an ease in controlling the device.

Regarding claims 67-72, Forrest/Kimura disclose the device comprising all

claimed limitations. See col. 16, line 65 to col. 17, line 8 of Forrest.

Regarding claim 73, Forrest discloses a light emitting device comprising:

an electroluminescent element comprising a first electrode, a second electrode, and a luminescent material interposed between the first and the second electrodes (fig. 5, and col. 9, line 18 to col. 11, line 18);

wherein, in the luminescent material, electroluminescence is obtained by triplet excitation (col. 2, line 58 to col. 3, line 53; col. 5, lines 9-27: the ISC Agents convert all of the excitations/excitons into their triplet excitations/excitons, which do emit), and

wherein the operation voltage of the electroluminescent element is 10V or less (see fig. 6).

Forrest is silent about a p-channel transistor having a source region, a drain region and a gate electrode, wherein any one of the source region and the drain region is electrically connected to the first electrode, and wherein digital signals are applied to the gate electrode.

Kimura discloses a light emitting device comprising an electroluminescent element 10810 having a first electrode (lower electrode), a second electrode (upper electrode 111; figs. 1, 2); a luminescent material interposed between the first electrode and the second electrode; and a thin film transistor 10710 having a source region, a drain region and a gate electrode, wherein any one of the source region and the drain

region is electrically connected to the first electrode of the electroluminescent element 10810 (fig. 2); wherein digital signals are applied to a gate electrode of the transistor 10710 to switch the transistor on/off. See further col. 2, lines 19-49; col. 3, line 47 to col. 4, line 61. In addition, it would have been well known and obvious to those skilled in the art that the transistor of Kimura can be either a p-channel or an n-channel transistor, any of which would equally fulfill the invention of Kimura.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Forrest so that it would include a thin film transistor electrically connected to the electroluminescent element as that of Kimura in order to control currents applied to the electroluminescent element, hence, to control the luminous intensity of the electroluminescent element. By using digital signal to control the transistor serially connected to the electroluminescent element, the nonuniformity in the luminous intensity of the luminescent element, caused by the nonuniformity in the conductance of the transistor, would be reduced, thereby the image quality would be improved (col. 2, lines 1-10, and lines 19-49 of Kimura.) Furthermore, such modification would greatly improve the performance of the device of Forrest due to an ease in controlling the device.

Regarding claim 74, Forrest/Kimura disclose the device wherein the first electrode is an anode, and the second electrode is a cathode. See fig. 5, and col. 5, line 65 to col. 6, line 8 of Forrest.

Regarding claims 75-80, Forrest/Kimura disclose the device comprising all claimed limitations. See col. 16, line 65 to col. 17, line 8 of Forrest.

Regarding claim 81, Forrest discloses a light emitting device comprising:

an electroluminescent element comprising an anode, a cathode, and a luminescent material interposed between the anode and the cathode (fig. 5, and col. 9, line 18 to col. 11, line 18);

wherein, in the luminescent material, electroluminescence is obtained by triplet excitation (col. 2, line 58 to col. 3, line 53; col. 5, lines 9-27: the ISC Agents convert all of the excitations/excitons into their triplet excitations/excitons, which do emit), and

wherein the operation voltage of the electroluminescent element is 10V or less (see fig. 6).

Forrest is silent about a transistor having a source region, a drain region and a gate electrode, wherein any one of the source region and the drain region is electrically connected to the anode, and wherein digital signals are applied to the gate electrode.

Kimura discloses a light emitting device comprising an electroluminescent element 10810 having a first electrode (lower electrode), a second electrode (upper electrode 111; figs. 1, 2); a luminescent material interposed between the first electrode and the second electrode; and a thin film transistor 10710 having a source region, a

drain region and a gate electrode, wherein any one of the source region and the drain region is electrically connected to the first electrode of the electroluminescent element 10810 (fig. 2); wherein digital signals are applied to a gate electrode of the transistor 10710 to switch the transistor on/off. See further col. 2, lines 19-49; col. 3, line 47 to col. 4, line 61.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Forrest so that it would include a thin film transistor electrically connected to the electroluminescent element as that of Kimura in order to control currents applied to the electroluminescent element, hence, to control the luminous intensity of the electroluminescent element. By using digital signal to control the transistor serially connected to the electroluminescent element, the nonuniformity in the luminous intensity of the luminescent element, caused by the nonuniformity in the conductance of the transistor, would be reduced, thereby the image quality would be improved (col. 2, lines 1-10, and lines 19-49 of Kimura.) Furthermore, such modification would greatly improve the performance of the device of Forrest due to an ease in controlling the device.

Regarding claim 82, Forrest/Kimura disclose the device wherein the transistor is a p-channel transistor. See col. 4, lines 40-53 of Arai.

Regarding claim 83-88, Forrest/Kimura disclose the device comprising all

claimed limitations. See col. 16, line 65 to col. 17, line 8 of Forrest.

Regarding claim 89, Forrest discloses a light emitting device comprising:

an electroluminescent element comprising a first electrode, a second electrode, and a luminescent material interposed between the anode and the cathode (fig. 5, and col. 9, line 18 to col. 11, line 18);

wherein, in the luminescent material, electroluminescence is obtained by triplet excitation (col. 2, line 58 to col. 3, line 53; col. 5, lines 9-27: the ISC Agents convert all of the excitations/excitons into their triplet excitations/excitons, which do emit), and

wherein the operation voltage of the electroluminescent element is 10V or less (see fig. 6).

Forrest is silent about a transistor having a source region, a drain region and a gate electrode, wherein an LDD region is not particularly provided between the source region and the drain region; and wherein any one of the source region and the drain region is electrically connected to the first electrode, wherein digital signals are applied to the gate electrode.

Kimura discloses a light emitting device comprising an electroluminescent element 10810 having a first electrode (lower electrode), a second electrode (upper electrode 111; figs. 1, 2); a luminescent material interposed between the first electrode and the second electrode; and a thin film transistor 10710 having a source region, a

drain region and a gate electrode, wherein an LDD region is not particularly provided between the source region and the drain region; and wherein any one of the source region and the drain region is electrically connected to the first electrode of the electroluminescent element 10810 (fig. 2); wherein digital signals are applied to a gate electrode of the transistor 10710 to switch the transistor on/off. See further col. 2, lines 19-49; col. 3, line 47 to col. 4, line 61.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Forrest so that it would include a thin film transistor electrically connected to the electroluminescent element as that of Kimura in order to control currents applied to the electroluminescent element, hence, to control the luminous intensity of the electroluminescent element. By using digital signal to control the transistor serially connected to the electroluminescent element, the nonuniformity in the luminous intensity of the luminescent element, caused by the nonuniformity in the conductance of the transistor, would be reduced, thereby the image quality would be improved (col. 2, lines 1-10, and lines 19-49 of Kimura.) Furthermore, such modification would greatly improve the performance of the device of Forrest due to an ease in controlling the device.

Regarding claim 90, Forrest/Kimura disclose the device wherein the transistor is a thin film transistor. See col. 2, lines 19-49; col. 3, line 47 to col. 4, line 61 of Kimura.

Regarding claim 91-95, Forrest/Kimura disclose the device comprising all claimed limitations. See col. 16, line 65 to col. 17, line 8 of Forrest.

Regarding claims 96-109, Forrest/Kimura disclose the device comprising all claimed limitations. See figs. 2, 6 of Forrest.

Conclusion

5. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to become abandoned (see M.P.E.P 710.02(b)).

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dao H. Nguyen whose telephone number is (571)272-1791. The examiner can normally be reached on Monday-Friday, 9:00 AM – 6:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith, can be reached on (571)272-1907. The fax numbers for all communication(s) is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571)272-1625.

Dao H. Nguyen
Art Unit 2818
December 9, 2006